The GES DAAC Prepares for Terra

by H. Lee Kyle
with Randy Barth, Chris Lynnes, George Serafino, and Bruce Vollmer

The GES DAAC enters a new era with the launch of the Earth Science Satellite called Terra. The Terra Polar Orbiter (formerly "AM-1") is scheduled to launch in late August 1999 from Vandenberg Air Force Base, CA. It will have a nominal altitude of 705 km and will be in a Sun-synchronous, near-polar circular orbit with a 10:30 a.m. descending node. This 5.9 meters long satellite will go up on an ATLAS II AS launch vehicle and will carry five important scientific instruments. The instrument of chief interest to the GES DAAC is the Moderate-Resolution Imaging Spectroradiometer (MODIS), which has 36 different frequency bands in the visible and infrared spectral regions (0.4 μm to 14.5 μm) to study features such as ocean plankton, vegetation on land, clouds in the atmosphere, and the temperature of the air. It will revisit each spot on the planet at least once every 2 days. The spatial resolution is 250 m (bands 1-2), 500 m (bands 3-7), and 1000 m (bands 8-36).

For the GES DAAC, data from MODIS will create an archived data stream increase of about a factor of 20. A new active archive system, "Version 2," is being put into place to handle this increased data volume. The GES DAAC itself will do the low level scientific processing of the data stream from the MODIS instrument. Special preparations for handling the increased user requests that will come with this important new Earth science data source are also underway. The actual instrument measurements go through several processing stages before most users find the measurements useful. The observations are originally recorded as digitized voltage readings in a compact spacecraft format. The general data level definitions listed below are common to all DAAC data sets, but some MODIS-particular comments are included.

Level 0: Instrument counts as received from the satellite — This includes sensor counts plus all engineering and ancillary data from the satellite in a compact satellite related format.

Level 1A: Radiance counts — These are the basic raw data (Level 0) but reformatted to hierarchical data format (HDF). The Level 1A files contain counts from all 36 channels for all times, resolutions, and detector views plus all engineering and ancillary data and an indicator of instrument observing modes. Calibrated and geolocated radiances are derived from Level 1A files.

Level 1B: Calibrated, geolocated radiances — These data have scientific units. For MODIS they will be $Wm^2\mu m^{(-1)}sr^{(-1)}$. Quality flags, error estimates, and calibration data are also provided.

Level 1B: Geolocation data set — Determined from the altitude and orbit of the satellite, instrument telemetry and a digital elevation model, this data set supplies geodetic coordinates, ground elevation, solar and satellite zenith, and azimuth angle for the MODIS 1 km samples. Higher level data are produced using this and the Level 1B calibrated radiance data set.

Level 2: Orbital science products — These include clouds, water-leaving radiance, chlorophyll concentration, sea surface temperature, aerosols, atmospheric water vapor, vegetation, and other land products. These have the same swath coordinates as the Level 1B input radiances and thus have the same spatial resolution.

Level 3: Gridded time and space averages of the science products.

Level 4: Gridded time and space averages generated by models and assimilated data programs.

GES DAAC Terra Responsibilities

The GES DAAC will receive the MODIS Level 0 data and produce the Levels 1A and 1B science products and cloud mask and atmospheric profile products. These products will be archived and all but the Level 0 data will be sent on to the MODIS Processing System (MODAPS), which will produce the higher level science products and return the MODIS ocean color, sea surface temperature, and other atmospheric science products to the GES DAAC for archiving. Other ancillary data sets needed for processing will also be archived. One will be the assimilated weather data set produced by the Goddard Data Assimilation Office. The most important responsibility, as always, will be to distribute these data to the working science teams and to the general public. The data products are released to the public after the science teams have validated and characterized their science content.

The MODIS land products will be archived at the Earth Resources Observation System Data Center at Sioux Falls, SD. The snow and ice products will go to the National Snow and Ice Data Center at Boulder, CO.

The Processing System

A new active archive system, part of an end-item deliverable contract planned and developed by the Earth Science Data and Information Systems project of NASA GSFC, will be used to process the Levels 0 and 1 Terra data. It's termed the EOSDIS Core System, but we call it the Version 2 system to distinguish it from the earlier Versions 0 and 1 archiving systems still in use for earlier data streams. The MODIS Science Team is furnishing the science Levels 1A and 1B processing software, and the GES DAAC Science Integration Group led by Bruce Vollmer is working with the Science Team to integrate that software into Version 2.

The GES DAAC System Execution Group, led by Catherine Harnden, is rigorously testing the whole system to ensure that it will be operational by launch time. After launch the system will be updated as required.

Customer Service

Recently, George Serafino established a new MODIS Data Support Team as a new element in the GES DAAC Data Support Group that he leads. Gregory Leptoukh is leader of this new team, which includes people with expertise in the oceans and atmospheres disciplines and software development. Greg's new team will spend the next couple of months learning about the MODIS instrument and data requirements. This will prepare the team to better serve the MODIS Instrument Team's data management needs, questions, and issues during operations. The team is also working on several items such as MODIS subsetting programs and a better Web based interface. The team's chief purpose is to serve the general user community by providing support for the MODIS data.

Discussion of Early Data Distribution Plans

In the A&E phase following Terra's launch the MODIS Science Team and the MODIS Characterization Support Team will concentrate on the instrument behavior. The GES DAAC will support them in this as required. Note that the Terra related data flow into the GES DAAC will represent about a 20-fold increase over the present ingest stream from existing missions. Data outflow to customers will also increase sharply. This will put a strain on the present GES DAAC system. However, we are making several software implementations to offset the problem. For example, preselected subsetting will allow average users to view items of interest without being overwhelmed with data.

When MODIS data become available in the future there will be three access paths:

via the EOSDIS V0 IMS gateway
http://lyta.gsfc.nasa.gov/~imswww/pub/imswelcome/
via the Goddard DAAC
http://daac.gsfc.nasa.gov/
by using subscriptions
(science calibration and validation teams will use this method)

In the GES DAAC, MODIS metadata (essentially a description of the data) will be collected on a regular basis and reformatted for use by the GES DAAC WHOM V0/V1 ordering system. This will allow users to place orders through WHOM (see p. 5). These orders will then be relayed to ECS (the Version 2 system) for filling.

References

Kaufman, Yoram, et al. *SWAMP Report to the IWG, The Earth Observer.* An Earth Observing System (EOS) Publication, 11:1:10-18.

Monastersky, Richard. Looking homeward, an instrument-laden satellite will survey Earth as never before, *Science News,* 115:248-250.

MODIS Home Page: http://modarch.gsfc.nasa.gov/MODIS/

At GES DAAC: http://daac.gsfc.nasa.gov/CAMPAIGN_DOCS/MODIS/html/mdst.html

An expanded and updated version of *The Global Scanner* is available on our Web site at
http://daac.gsfc.nasa.gov/DAAC_DOCS/Newsletter
News of noteworthy events that occur in the interim between publication of this issue and the next will be posted there along with goodies we feel may be helpful to our users. Be sure to visit the site from time to time.

The GES DAAC How It Works

by
Steve Kempler
and Lee Kyle

The GSFC Earth Sciences (GES) Distributed Active Archive Center (DAAC) is a source of information for atmospheric, hydrologic, ocean color, and some other data. It provides data and services for global change research and education. Its mission is to maximize the investment of NASA's Earth Science Enterprise by providing data and services that enable people to realize the scientific, educational, and applications potential of global climate data. The GES DAAC aim is to be a facility to study the natural and human processes that influence Earth's climate.

The GES DAAC, headed by Steve Kempler, works closely with both the science teams who supply data to the archive and the science, applications, and education data users. Working with the data suppliers the GES DAAC personnel ensure the integrity of the archived data and prepare documentation to describe the data scientifically together with its archived data format. In addition, they at times supply auxiliary data to the science teams to assist in data validation and processing. The GES DAAC also assists science teams by doing portions of the data processing. General data users are assisted by the creation of an Internet Web information and ordering system and a help desk accessible both by phone and e-mail. The help desk takes orders and also works with data users who are having format or other data problems. The

data are available electronically by file transfer protocol (ftp) and on digital tape. Using Internet browsers, such as Netscape, users can directly download many of the files.

To do its task the GES DAAC has divided its personnel into four components, or groups, who work closely together to form a complete team. Each group has its own leader and addresses a vital part of the GES DAAC mission. Each component is essential to the success of the GES DAAC and that of the other components.

GES DAAC Components
Engineering
(aka system development, infrastructure)
Chris Lynnes, leader
System Execution
Catherine Harnden, leader
Customer Support
(customer service)
George Serafino, leader
Science Integration
Bruce Vollmer, leader

Engineering

The GES DAAC Engineering Group, led by Chris Lynnes, is made up of highly skilled systems engineers, software engineers, system administrators, and data base administrators. The Engineering Group is responsible for the hardware and much of the software

that makes the GES DAAC function. They provide the systems administrators and data base administrators that keep the hardware and commercial software working. They also provide the systems engineering, analysis, programming and testing that support the ingesting, searching, ordering, and distribution of the vast archive that makes up the DAAC's holdings. On top of that, the Engineering Group has taken on many new innovative activities that add very worthwhile functions to the GES DAAC arsenal of data management capabilities. Development of these functions is consistent with the trend to move toward principal investigator (PI) processing in the future. Very recently the Engineering Group rose to new challenges by developing and implementing several functions that will improve the systems' capabilities. These will allow the GES DAAC to better handle the increased data flow and user demands that will accompany the scheduled late August launch of the new NASA Earth observing Terra satellite.

There are currently two active archive systems working at the GES DAAC, with a third system to be operational soon to support Terra. New satellites and their instruments often bring the GES DAAC increased data volumes while new hardware and software developments allow innovative new ways to handle these increases.

To prevent interruptions to our present customers and to keep costs down, new systems have been brought in to handle new data streams while the old systems have been maintained for the heritage data sets. The older systems are continuously upgraded to improve service.

Version 0: Developed by GES DAAC personnel to support data originating prior to 1998.

Version 1: Developed by GES DAAC personnel to support data originating from TRMM, starting November 1997.

Version 2: Developed by the ESDIS Project to support Terra, to be launched July 1999. GES DAAC personnel are developing extensions to the system to improve our ability to handle Terra data (see "The GES DAAC Prepares for Terra").

System Execution

The GES DAAC Data Operations Team is responsible for the operations of the GES DAAC active archive systems, including hard media and soft media data distribution. This team, led by Catherine Harnden, is composed of a ground controller, operators, distribution technicians, and AVHRR Land Pathfinder data support personnel. This team ensures that the system archives and distributes data properly, monitors system health, distributes information on hard media, and supports AVHRR data processing. With the increasing demand for GES DAAC data, the operations group is continually rising to new challenges. Their success oriented attitude brings great satisfaction to GES DAAC data users and merit to the GES DAAC itself. This team is presently checking out the Terra Version 2 archiving system. The work of this team is increasing markedly as they prepare for the large increase in data volume and data handling that Terra will bring.

Customer Support

George Serafino leads a group of science trained and engineering trained generalists who guide the data from the data producers to the data user public. These are the GES DAAC people that the data producers and users are most likely to meet and work with directly. This group concentrates on the data and on the needs of both the data producers and data users. To carry out their data support tasks the personnel are assigned to six discipline related Data Support Teams (DSTs). Each DST member specializes in the data holdings that apply to their discipline and is equipped to answer a wide range of questions about those data, anything from data access to specific characteristics. DST members are also experts in remote sensing data and applications.

This blend of science and engineering expertise has led to very satisfied users. In addition to the requests for detailed information come requests for data that may require some effort to produce. Specific value-added data products are actively being developed by the DSTs to satisfy the heard needs of GES DAAC customers. These include converting data into geographic information system (GIS) format, producing regional subsets of data, and regridding multiple parameters to uniform spatial and temporal scales. The disciplines that the DSTs support are

Atmospheric Chemistry
James Johnson, leader
Atmospheric Dynamics
Jianchun Qin, leader
Land Biosphere
Peter Smith, leader
Hydrology
William Teng, leader
Ocean Color
James Acker, leader
MODIS Products
Gregory Leptoukh, leader

Last, but not least, in the Customer Support Group the WWW specialists, help desk (Frances "Dinky" Bergmann), and outreach specialist (Susan Hunter), all play essential roles in making the GES DAAC a class organization. For additional information, see the article "The GES DAAC Prepares for Terra."

Science Integration

GES DAAC's newest group, led by Bruce Vollmer, was formed to address the changing and enhanced role of the GES DAAC. In its initial task this group is working with the MODIS Team to ensure that their science software is successfully integrated into the Version 2 archiving system. In doing so, Bruce's team was also able to fully exercise and learn GES DAAC's science software integration and test process. With future missions, this team will work with the experiment teams to work out archiving scenarios, which can include such science processing of the data stream as is desired by the PI team.

An Integrated GES DAAC

As mentioned earlier, the four components of the GES DAAC are highly interdependent and integrated. In their normal work, GES DAAC staff freely consult with others to solve specific problems that arise. These consultations include members of any of the four groups plus outside individuals as required. In addition, the group leaders meet once a week to discuss continuing and new activities.

The Engineering Group services the System Execution component by ensuring that the systems are up, running, and easy to use. The Engineering Group is also involved with the Customer Support Group, advising on how the GES active archives can manage proposed value-added data operations and new distribution demands. Likewise, Science Integration interacts with Engineering to address the impact of new science software and data requirements.

System Execution also services Customer Support by relating system changes and reacting to science data needs. Because Science Integration has thus far been involved with Version 2, they have worked closely with System Execution toward making the integrated Version 2 Science Software system operational.

Finally, the relationship between Science Integration and Customer Support is natural. Once new science software or data are integrated into the GES DAAC, the appropriate DST is enhanced (or a new one is created, as is the case with MODIS) to take over and support the science team and their data customers.

The #1 goal of the GES DAAC is to enable science.

WHOM
A Web Hierarchical Ordering Mechanism

by
Chris Lynnes

The Goddard Earth Sciences (GES) DAAC was an early Worldwide Web entrant, with an operational ordering interface in 1995. Though incrementally improved since then, our Website was still ripe for redesign to keep abreast of rapid Web advances. This second-generation interface has been constructed around two key lessons: 1) many users have trouble with or just dislike search forms; and 2) it is essential to separate software from content in order to keep Web pages up to date.

Search Forms Versus Data Availability

In typical data center navigation mode, the data center says: "Tell me what you want, and we'll tell you if we have it." However, for those users who don't have a clear idea of what they want or how to find it, this can produce no results or too many results—frustrating when the user has spent time entering search qualifiers into a form. In a data availability model, the data center says: "Here is what we have; tell us what you want." This is often implemented as a simple hierarchical browsing interface with simple hyperlinks. Neither model is likely to satisfy everybody, as evidenced by the evolution of Web search engines to include the hierarchical model (e.g., Lycos) and hierarchical portals to include search forms (e.g., Yahoo).

In the reengineered GES DAAC Web interface, a data availability model for all data sets has been added, which is implemented as a simple hierarchical structure; hence, the WHOM name. The hierarchy normally begins at the data set level and is subdivided by data products and then by time ranges (year/month/day). (For simplicity, the underlying implementation is UNIX directory structure.) Alternative structures such as Parameters→Data Products→Spatial Area can be laid over this structure through symbolic links and hyperlinks.

Each level of the hierarchy below the data set level has selection boxes to allow users to order entire data products or time ranges with a minimum of effort. In contrast, many search interfaces require the user to first search, then display the results at an item level before the selection process begins. For data products with many items this can be a long, laborious process.

Separating Software From Content

Over time, the first generation architecture gradually mixed more and more software with the content. As a result, it became labor intensive to update contents, as they had to pass through the lengthier software modification process, which included testing. As a corollary, on-the-fly page generation limited the ability of users to bookmark data products of particular interest. On the other hand, manually generated, static pages are limited in their ability to present up to date information about an archive that changes daily.

The new architecture uses HTML templates together with page generation software to build both static and some on-the-fly pages. The page generation software is run daily to create static pages, and on demand for the on-the-fly pages (such as search results). See Figure 1 below.

This allows the separation of "static" content, such as descriptions of data sets, from "dynamic" content, such as the number of data files available for a given data product or time span. It also allows the static content to be updated
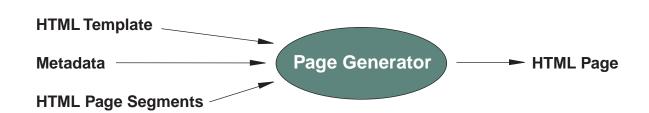

Figure 1

New Data
Products

General News

People in the
News

independent of the software. Finally, the templates help provide a consistent look and feel across different data sets. The end result is a more dynamic, up to date site in terms of information content.

Return to Simplicity

With the gradual accretion of software enhancements to the first-generation interface, it became more difficult to add new technologies without breaking existing software. The new architecture, with its hierarchical structure and template driven pages represents a major simplification of the system, enabling further infusion of new technology as the Web continues to evolve at breakneck speed. The hierarchical, point-and-click navigation mode is also simpler for many users, nicely complementing the search form mode.

WHOM Development and Implementation

The new WHOM search and order program is a joint project of the GES DAAC's Engineering and Data Support groups. The initial version was developed by a group of engineers and the Tropical Rainfall Measuring Mission support team, headed by Bill Teng. Nancy McCrimmon coordinates the effort. Each data support team has the responsibility of hooking the data sets they are responsible for to the new WHOM ordering system. This includes entering descriptive index information into the WHOM index system. It may also include some data set specific ordering instructions or capabilities. John Bay is in charge of a shopping basket algorithm, which allows users to combine several different items from multiple data sets into one order. The WHOM program is presently in service and will be modified and improved as required. Check it out on the Web:

http://daac.gsfc.nasa.gov/data/

DATA PRODUCTS AND SERVICES

14 Years of NDVI Data Available

The AVHRR (Advanced Very High Resolution Radiometer) Land Pathfinder team has completed 14 years' worth of 10-day composites. The data were reprocessed to correct for a solar zenith angle problem. The data years are 1981-1994. The 10-day composites and the monthly mean climate products are now available to users. The products include the Normalized Difference Vegetation Index (NDVI) — a greenness index, reflectances derived from AVHRR channels 1 and 2, brightness temperatures from channels 3, 4, and 5, plus additional information. The basic products are on a land only 8 km by 8 km world grid. Additional information and other data sets are discussed on our Land Biosphere Web Page, which can be reached through the GES DAAC Home Page.

TRMM Rain Data Available

Version 4 TRMM rain and associated products are available for the period December 1997 up to the present. The production of Version 4 algorithm TRMM products started in September 1998. Reprocessing of the previous data was completed in March 1999. Production is presently keeping up with the satellite observations. It is planned to start Version 5 algorithm production in August 1999, and reprocessing is expected to take about 9 months. From time to time, studies by the TRMM Science Team produce improvements in instrument calibration and product algorithms. Reprocessing is then required in order to produce optimal long-term data sets.

Ocean Color Data

Ocean color and chlorophyll products from the Sea-Viewing Wide Field-of-View Sensor (SeaWiFS) are available from September 1997 on, with about a month delay after the actual observations. The global area coverage (GAC) data are available with a level 1A and level 2 resolution of 4 km, while the gridded level 3 data have a 9 km resolution. Quite a bit of 1 km resolution local area coverage (LAC) data are also available. The NASA SeaWiFS data set is a data purchase from Orbital Science Corporation (OSC) and comes with certain restrictions. To obtain these data, would-be users must register and submit a summary research proposal. They must also sign an agreement not to share the SeaWiFS data they obtain with any nonregistered scientists. All members of a study team should register, not just the principal investigator. Details of how to register are available through the GES DAAC Home Page. The first 5 months of SeaWiFS data and all 8 years (11/1978-06/1986) of Coastal Zone Color Scanner (CZCS) ocean color data are available on an unrestricted basis.

Atmospheric Chemistry

This data set category includes measurements of the total atmospheric ozone and the atmospheric chemistry

that produces and destroys stratospheric ozone. Ozone measurements by the Total Ozone Mapping Spectrometer (TOMS) instruments started in November 1978 and continue to the present with an 18-month gap from January 1995 to June 1996. Some smaller gaps also occur. TOMS has flown on several satellites, and the current sensor is on the Earth Probe TOMS. We also make available total ozone data (1/96-present) from the Global Ozone Monitoring Experiment (GOME). GOME flies on the European Earth Resources Satellite (ERS-2). These data are mirrored at the GES DAAC courtesy of the German Remote Sensing Data Center (DFD/DLR). The stratospheric chemistry data sets come from the suite of instruments on the Upper Atmosphere Research Satellite (UARS). Some of these instruments still operate. James Johnson, leader of the Atmospheric Chemistry DST, reports that a new orbital subsetting routine will soon be included in their search and order system. This will allow customers using the Internet to order customer specified regional subsets of TOMS ozone data.

Atmospheric Dynamics

The 4-dimensional dynamic and thermodynamic state of the Earth-atmosphere system is defined by satellite sounding measurements and by data assimilation system products. Several gridded data sets give atmospheric and surface climate parameters for the period 1978 through 1995, though most of the data sets don't cover the whole period. Several data sets are available; some important ones are

Goddard Data Assimilation Office (DAO) Data — Global meteorological data are calculated using a general circulation meteorological model constrained by measured pressure, temperature, winds, etc. The longest present DAO data set is the GEOS-1 model (03/1980-12/1993).

Tiros Operational Vertical Sounder (TOVS) Path A and Path B Pathfinder Data — The TOVS instrument package provides information on temperature and humidity profiles, total ozone, clouds, and radiation on a global scale. Separate AM and PM soundings are given along with 5-day and monthly mean results. Two separate sounding methodologies are supported at the GES DAAC. The TOVS Path A results calculated by Joel Susskind and his group at NASA GSFC, and the TOVS Path B results calculated by a different scheme at the Laboratoire de Meteorologie Dynamique (LMD) du CNRS (France) under the direction of Noelle Scott. Present Path A data run from November 29, 1978, to July 1, 1994. The present Path B data run from December 31, 1986, to July 5, 1995.

A new data set related algorithm provides the capability of on-the-fly spatial subsetting of the TOVS and DAO data sets generated from our anonymous FTP holdings. For user specified parameters and spatial and temporal ranges the system will automatically produce the subset files for you in either ASCII or binary format. You will then be able to download the data files you just created directly from your Web browser.

GES DAAC CD-ROMs Are Popular

We ship several thousand CD-ROMs every month — see "Data Handled" under General News. Most of our CDs were designed for use by researchers, but a number of professors and teachers also use them, or information from them, in their classrooms and labs. Presently most popular are the ones that deal with the total atmospheric ozone measurements taken by the TOMS instrument and with interdiscipline climate studies. The International Satellite Land Surface Climatology Project (ISLSCP) contains global data sets for land-atmosphere interaction models. The ISLSCP data sets include vegetation and biosphere, hydrology, near surface meteorology, soils, and snow and ice cover for the years 1987 and 1988. The Climatology Interdiscipline Data Collection (CIDC) contains over 70 monthly mean physical climate parameters summarized from 25 major climate data sets. About half the data sets span more than 10 years, and a few span more than 100 years.

For more details about the GES DAAC data holdings see our Home Page or contact us by e-mail or phone.
http://daac.gsfc.nasa.gov/
e-mail: daacuso@daac.gsfc.nasa.gov
voice: 301-614-5224
fax: 301-614-5268

GENERAL NEWS

New GES DAAC Home Page

The GES DAAC is proud to announce an improved GES DAAC Home Page at its usual location: http://daac.gsfc.nasa.gov/. The rapid increase in GES DAAC activities combined with evolving Web capabilities convinced us to give the GES DAAC Web Site a facelift. Peggy Eaton did a terrific job clearly laying out the disciplines for which the GES DAAC provides data. She was assisted by others on the DAAC staff, notably Rob Simmon, Jake Johnson, and James Johnson. The site includes data descriptions and clear links to data ordering pages. There is now an easy access to MODIS data information. Of particular interest is the applications research flavor of the Web page. As the cursor points to each discipline, a different application applicable to that discipline is displayed. We invite you to visit the site soon.

Proposal Accepted

Bill Teng is coinvestigator on a recently funded NASA proposal, "Assessment of Global Crop Production From

New Generation Remote Sensing Technology." The principal investigator of this multi-institution proposal is Paul Doraiswamy of the U.S. Department of Agriculture in Beltsville, MD. The GES DAAC will participate by furnishing satellite data, archiving crop related data products, and conducting an outreach program to inform potential users of the crop information produced by the proposed work.

GES DAAC Is Y2K Ready

GES DAAC staff have checked all the equipment and software used at the GES DAAC operation, and everything was found to be fully Year 2000 compliant. Randy Barth reports that we actually have been compliant for some time, and that our recent efforts have been to demonstrate this compliance and to fulfill the requirements on the various certification forms that we have submitted.

GES DAAC Stats

DATA HANDLED
Reported by Liz Kennedy and Frances Bergmann

Data Handled in Terabytes During 1999						
	INGESTED		DISTRIBUTED			
Month	V0	V1	ftp	Tape	CDs	Total
January	0.0632	0.6049	0.323	1.444	3.616	5.406
February	0.0520	0.6150	0.363	1.469	7.030	8.862
March	0.0860	0.5720	0.305	2.591	5.736	8.632

Requests for Inventory Items		
Month	Documents	CDs
January	2,055	2,886
February	783	4,913
March	366	3,910

Note: The V0 system handles data sets that started before 1998. The V1 system handles TRMM data.

Spring 1999 AGU Presentations

Long S. Chiu and coauthors presented the poster paper "TRMM Data Subsets for SCSMEX (South China Sea Monsoon Experiment) Field Campaign Analysis" at the AGU meeting in Boston. The paper describes gridded orbital subsets and satellite and ground radar coincidence subsets from the TRMM standard products. These subsets were formed to support data analysis in this field experiment.

Sunmi Cho and Jianchun Qin presented a poster paper entitled "Microwave Sounding Unit Limb93 Data at the Goddard DAAC." This TOVS microwave sounding unit (MSU) LIMB93 data set contains gridded mean, deep layer atmospheric temperatures, and ocean precipitation for the period 1979 to May 1994. This data set is the predecessor of the TOVS Pathfinder (Path C) data set produced by Marshall Space Flight Center as part of the NOAA-NASA Pathfinder Project.

PEOPLE IN THE NEWS

Congratulations to Bill Teng on His Recent Promotion

Bill Teng is assuming the position of Science Lead for the work supporting George Serafino's Data Support Group and the SSI&T initiative supporting Bruce Vollmer. Dr. Teng will work closely with George and Bruce to coordinate and lead the scientific challenges in both areas. This position also carries the title "Section Manager" within the Raytheon ITSS corporate structure. As of now, Dr. Teng will also continue as leader of the Hydrology Data Set Team. We are sure that everyone will give him their full support as he assumes the responsibilities of this new position.

ACDIS Team Achievement Award

The AM-1 Contingency Data Information System (ACDIS) implementation team at the GES DAAC was awarded the Raytheon Team Achievement Award for their intense effort in meeting a very aggressive schedule. The team undertook a very difficult challenge to design and implement a distribution system for Terra (AM-1) MODIS instrument data and have it ready for formal end to end testing scheduled for March 1999. The team exceeded expectations in having a tested, robust system ready to undergo formal testing. The ACDIS implementation is being used and reused for various purposes. The most recent application is as the interface for sending data from the MODIS PI Processing System (called MODAPS) to the GES DAAC. The flexibility and reusability of ACDIS makes this award particularly appropriate. Team members were

Randy Barth	Kathy Rivas
John Bay	Dave Shirey
Jean Bedet	Cathy Shry
Dan Iredell	Robert Swafford
Liz Kennedy	Michael Ta
Nancy McCrimmon	John Vanderpool
Roger Pearson	Quilian Yang

Look for our next issue in the fall.